REGAL LONDON Ryder

100-100A Chalk Farm Road
Planning Pre Commencement Condition Discharge
Condition 9

Ryder Architecture Limited
Newcastle
London
Glasgow
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This document has been designed to be viewed / printed A3 double sided.

Introduction

This information was previously granted approval on 27 November 2025, in accordance with the requirements outlined in the planning conditions of the planning application referenced as 2024/0479/P.
The following document has been prepared by Ryder Architecture on behalf of Regal London to illustrate the details in pursuance of discharging the planning condition noted below under planning application reference number 2024/0479/P.

Pre Commencement Condition 9: Waste Water Heat Recovery

Prior to commencement of above ground works (other than demolition), manufacturer's data sheets and modelling snapshots (including assumptions and methodology) together with evidence that demonstrates the percentage of the hot water demand the wastewater heat recovery technology offsets should be submitted to and approved in writing by the local planning authority.

The equipment shall be installed in full accordance with the approved details and permanently retained and maintained thereafter.

Reason: To ensure the development provides adequate on site renewable energy facilities in accordance with the requirements of policy CC1 of the London Borough of Camden Local plan policies.

Information

Evidence	Consultant
Waste water heat recovery technical note	Whitecode Consulting
Technical Specifications	Zypho

Chalk Farm Road

Waste Water Heat Recovery Technical Note

30th January 2025
P01

Purpose of Note

This technical note has been prepared by Whitecode Consulting Ltd (WCL) to detail the inputs of the waste-water heat recovery (WWHR) devices used in the energy assessment at Chalk Farm Road, Camden, and to discharge one of the pre-commencement conditions which states:

Wastewater Heat Recovery
Prior to commencement of above ground works (other than demolition), manufacturer's data sheets and modelling snapshots (including assumptions and methodology) together with evidence that demonstrates the percentage of the hot water demand the wastewater heat recovery technology offsets should be submitted to and approved in writing by the Local Planning Authority. The equipment shall be installed in full accordance with the approved details and permanently retained and maintained thereafter.

The site proposes to use the Zypho iZi 30 WWHR unit in a "System B" arrangement.

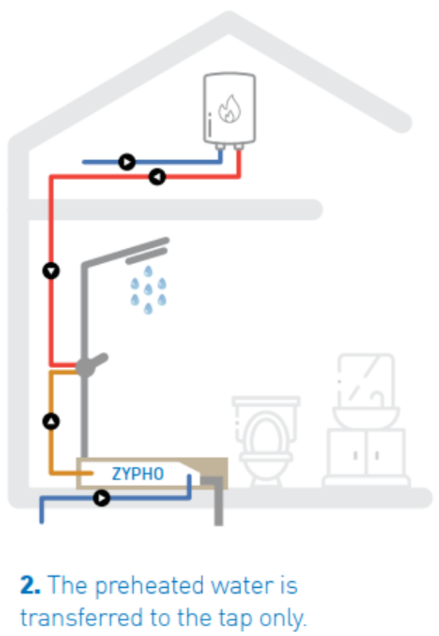


Figure 0.1: Image showing a System B arrangement

The SAP Product Characteristics Database (PCDB) lists the efficiency of this unit as 37.1% when in a System B arrangement and at a flow rate of 5 l/min.

The modelling of the scheme has been completed using a dynamic simulation model (DSM). While this type of modelling accounts for many factors that can influence a building's performance, it does not explicitly account for WWHR. As a result, this has been accounted for using the WWHR Energy Saving Calculator developed by Recoup and their "workaround" for inclusion of WWHR into a DSM thermal model[1].

235 showers fitted with Zypho "iZi 30" units were calculated to reduce DHW energy demand by 39,629 kWh/year. Following Recoup's guidance, the efficiency of the system serving the DHW was manually adjusted to account for this in the model.

2. Artificially increase the efficiency of the DHW plant

Manually increasing the system efficiency of the DWH plant, will reduce the kWh required to produce DHW. You can, therefore, increase the DHW plant efficiency, to the point that the kWh required to produce DHW is, reduced by the energy reduction as shown in the calculation (yellow box)

Figure 0.2: Recoup's guidance on accounting for WWHR within IES from https://knowledge.recoup.co.uk/how-do-you-model-wwhrs-in-dsm-ies-ve-tas-apache-hvac

Duration (Minutes)	Flow rate (L/Min)	Total Water used (Litres)	Total Energy (kWh)	Recoverable Energy (kWh)	
7.5	6	45	1.46510	1.20	
Number of Showers					
No. of showers present	235.0		Total Showers Per Day	199.8	
Occupancy rate	0.85		Total Showers Per Year	72909	
Users per shower present	1.000				
	Total Energy Required (kWh)	**Total Recoverable Energy (kWh)**	**Direct Energy Recovered (kWh)**	**Energy Required for DHW (kWh)**	**Effective COP of WWHRS Unit**
Per Day	**292.7**	**240.4**	**89.2**	**203.5**	1.44
Per Year	**106818.6**	**87743.9**	**32553.0**	**74265.6**	1.44

Figure 0.3: Image of the WWHR energy savings calculation

[1] https://knowledge.recoup.co.uk/how-do-you-model-wwhrs-in-dsm-ies-ve-tas-apache-hvac

The figures below show the results of the dynamic simulation model with and without WWHR. Based on the total floor area of 10,435.5m^2. The results of the analysis show that WWHR is saving approximately 31,932kWh of energy per year. This correlates well (<2% difference) with the results of the spreadsheet calculation and is believed to be indicative of the likely savings that would be achieved on site.

With WWHR

Energy Consumption by End Use [kWh/m^2]

	Actual	Notional
Heating	4.9	6.37
Cooling	1.42	1.33
Auxiliary	7.65	4.56
Lighting	7.23	9.2
Hot water	7.28	10.74
Equipment*	32.65	32.65
TOTAL**	**28.48**	**32.19**

* Energy used by equipment does not count towards the total for consumption or calculating emissions.
** Total is net of any electrical energy displaced by CHP generators, if applicable.

No WWHR

Energy Consumption by End Use [kWh/m^2]

	Actual	Notional
Heating	4.9	6.37
Cooling	1.42	1.33
Auxiliary	7.65	4.56
Lighting	7.23	9.2
Hot water	10.34	10.74
Equipment*	32.65	32.65
TOTAL**	**31.53**	**32.19**

* Energy used by equipment does not count towards the total for consumption or calculating emissions.
** Total is net of any electrical energy displaced by CHP generators, if applicable.

Furthermore, the WWHR is offsetting approximately 29% of the total DHW energy consumption if WWHR were not to be included.

DHW Energy Consumption <u>without</u> WWHR: 10.34 kWh/m^2 x 10,434.5m^2 = 107,903 kWh
DHW Energy Consumption <u>with</u> WWHR: 7.28 kWh/m^2 x 10,434.5m^2 = 75,970 kWh

Percent reduction in DHW energy consumption: (75,970 kWh – 107,903 kWh) / 107,903 kWh = -29.6%

TECHNICAL SPECIFICATIONS

iZi 30
HIGH FLOW

iZi 40
ECO SHOWER

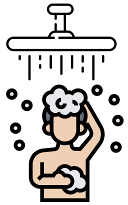
Zypho® transfers heat from the shower's wastewater (40º) to the incoming cold mains (10º) supply. This preheated water (up to 23º) is then directed to either the shower mixer, the water heater or preferably both - reducing energy consumption up to 40% - Improving Energy Efficiency. Every three showers, two are for free.

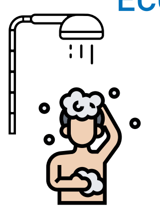
Zypho® iZi has several installation options - see range - with efficient waste trap filters.

The Zypho® iZi requires minimal maintenance and can be installed in new or retrofitted buildings.

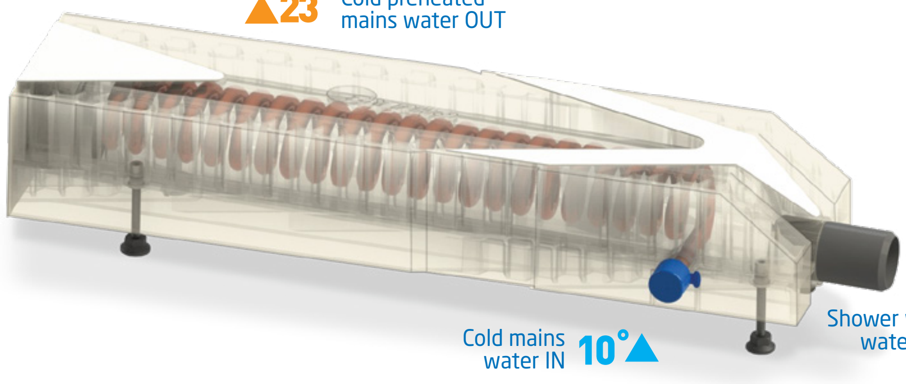
iZi VERSIONS

HIGH FLOW
Zypho® iZi 30
High Flow





ECO SHOWER
Zypho® iZi 40
Eco Shower



PATENT (PCT054506)

ZYPHO® iZi RANGE

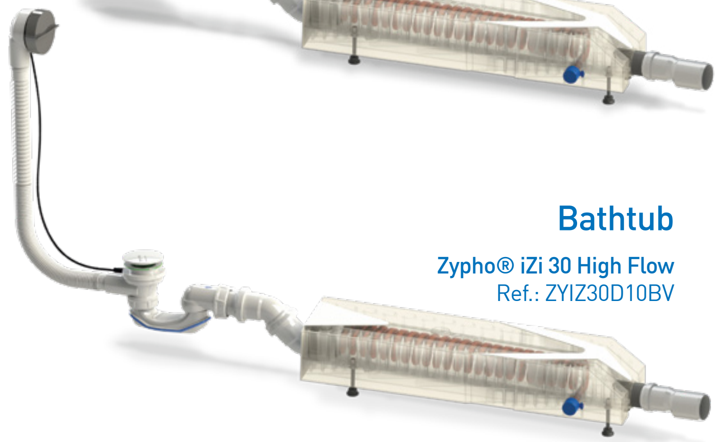
Shower tray

Zypho® iZi 30 High Flow
Ref.: ZYIZ30D10SV

Zypho® iZi 40 Eco Shower
Ref.: ZYIZ40D10SV

Bathtub

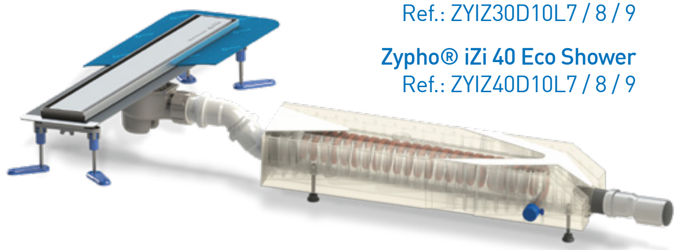
Zypho® iZi 30 High Flow
Ref.: ZYIZ30D10BV



Linear Drain

Zypho® iZi 30 High Flow
Ref.: ZYIZ30D10L7 / 8 / 9

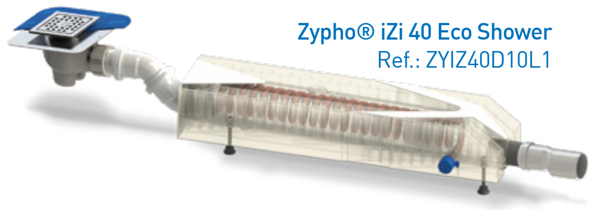
Zypho® iZi 40 Eco Shower
Ref.: ZYIZ40D10L7 / 8 / 9



Square Drain

Zypho® iZi 30 High Flow
Ref.: ZYIZ30D10L1

Zypho® iZi 40 Eco Shower
Ref.: ZYIZ40D10L1



TECHNICAL CHARACTERISTICS

Description	Units	Value iZi 30	Value iZi 40
Temperature Range	C°	0-60	0-60
Drinking water maximum pressure	bar	6.0	6.0
Drained water maximum flow rate (1)	L/min	25.0	12.5
Drained water recommended flow rate	L/min	12.5	7.5
Heat exchanger material (2)	-	Copper	Copper
Body Material	-	ABS	ABS

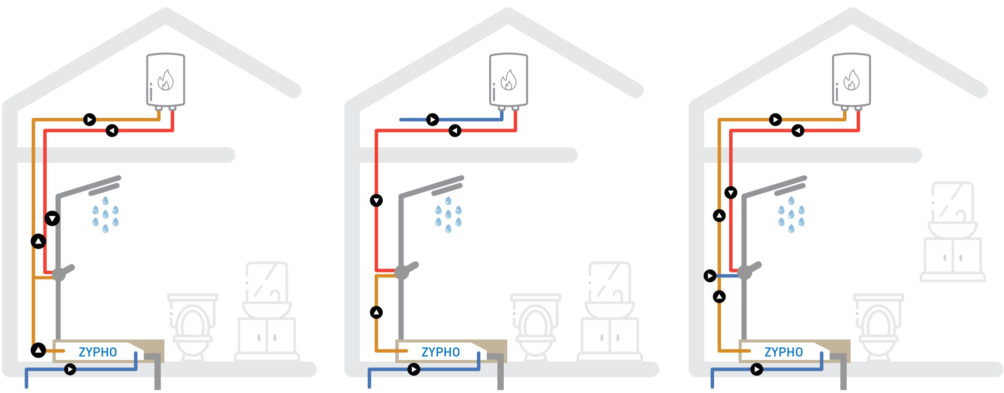
(1): Value is assuming 2cm water level. Depending on the installation, the flow rate may change.
(2): Double-wall Heat Exchanger as requested by EN1717.

PERFORMANCE & EFFICIENCY

	iZi 30		iZi 40	
Flow Rate	Efficiency	Pressure drop	Efficiency	Pressure drop
5.8 L/min	31%	0.2 bar	39%	0.1 bar
9.2 L/min	28%	0.6 bar	33%	0.3 bar
12.5 L/min	25%	1.1 bar	29%	0.7 bar

Tolerances: Efficiency ± 3 p.p. | Pressure drop ± 0.1 bar.

ZYPHO SYSTEMS ARE CERTIFIED AND PATENTED



1. The preheated water is transferred to the tap and the boiler.
The most efficient configuration.

2. The preheated water is transferred to the tap only.

3. The preheated water is transferred to the boiler only.

HOT WATER PREHEATED WATER COLD WATER

LEGIONELLA PREVENTION

Zypho® iZi design minimizes Legionella-related risks:
- Drain water does not stall inside the unit because the water is fully drained out at the end of every shower.
- After every shower the preheated water immediately cools below 25 ° C, which is a safe temperature according to WHO and European Working Group for Legionella Infections.
- Since the unit is installed relatively close to the shower mixer, the distance between the unit and the shower trap is minimized.

MAINTENANCE

Zypho® iZi Heat Exchangers have been designed to require minimal maintenance efforts. They must be installed with the shower drain provided. Periodic cleaning is recommended to optimise energy exchange. Use a non-corrosive drain cleaner or a water jet. We recommend our non-corrosive biological drain cleaner with the reference ZYMN00000C1 or our water jet brush ZYMN00000J1.

UK distribution by ZapCarbon Ltd.

For more information, please email: **Zypho @ ZapCarbon.com**

Alternatively call us on 0845 052 3682 / 07879 69 59 87

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